

Claims

- [c1] 1. A method for distributing content of large payload file to a plurality of storage devices in a network node comprising:
 - obtaining a plurality of block files representing content of a large payload file for storage in a plurality of storage devices in a network node;
 - associating said plurality of block files with said plurality of storage devices;
 - storing said plurality of block files in said plurality of storage devices based on said associations;
 - creating a virtual file, using said associations, for presentation to a client requesting said file content, said virtual file providing an illusion to said client that said file content is contiguous in said network node.
- [c2] 2. The method of claim 1, wherein said network comprises a packet-communication network.
- [c3] 3. The method of claim 1, wherein said obtaining a plurality of block files comprises:
 - obtaining said large payload file from a user;
 - evaluating said large payload file to locate a portion having substantive content;
 - determining if said content from said large payload file comprises linear characteristics by determining if said substantive content is located at a starting end of said large payload file;
 - generating a track file if said content comprises said linear characteristics;
 - generating a plurality of track files if said content does not comprise said linear characteristics;
 - determining at least one desired block size;
 - if said content comprises linear characteristics, dividing said track file to generate a plurality of block files, wherein each of said block files correspond in size to said at least one desired block size;
 - if said content does not comprise linear characteristics, dividing each of said plurality of track files to generate a plurality of block files, wherein each of said block files correspond in size to said at least one desired block size.

- [c4] 4. The method of claim 3, wherein said desired block size is determined by selecting a block size to maximize space usage within said network's maximum transmission unit.
- [c5] 5. The method of claim 3, wherein said network has a plurality of distribution nodes and said desired block size is determined by selecting a block size to minimize congestion at said distribution nodes of said network.
- [c6] 6. The method of claim 3, wherein said desired block size is determined by selecting a block size to minimize fragmentation of said plurality of storage devices.
- [c7] 7. The method of claim 3, wherein said at least one block size comprises a fixed value.
- [c8] 8. The method of claim 1, wherein said associating said plurality of block files comprises distributing said plurality of block files amongst said plurality of storage devices such that said plurality of storage devices are load balanced during input/output operations.
- [c9] 9. The method of claim 1, further comprising storing said associations in a file metadata in said plurality of storage devices, said associations comprising information for rebuilding said large payload file from said block files.
- [c10] 10. The method of claim 1, wherein said network comprises a plurality of nodes and said plurality of block files is obtained from other nodes of said network.
- [c11] 11. The method of claim 9, wherein said creating a virtual file comprises: obtaining information about said large payload file from said file metadata; using said information to construct a virtual representation of said large payload file.
- [c12] 12. A method for distributing content of a large payload file to a plurality of storage devices in a network node comprising: obtaining a plurality of block files representing content of a large payload file for storage in a plurality of storage devices in a network node;

associating said plurality of block files with said plurality of storage devices, wherein said associating comprises creating associations distributing said plurality of block files amongst said plurality of storage devices such that said plurality of storage devices are load balanced during input/output operations; storing said associations in a file metadata in said plurality of storage devices, said associations comprising information for rebuilding said large payload file from said block files;

storing said plurality of block files in said plurality of storage devices based on said associations;

creating a virtual file, using said associations, for presentation to a client requesting said file content, said virtual file providing an illusion to said client that said file content is contiguous in said network node.

[c13] 13. A computer program product comprising:
a computer usable medium comprising computer readable code for distributing content of large payload file to a plurality of storage devices in a network node, said computer readable program code configured to:
obtain a plurality of block files representing content of a large payload file for storage in a plurality of storage devices in a network node;
associate said plurality of block files with said plurality of storage devices;
store said plurality of block files in said plurality of storage devices based on said associations;
create a virtual file, using said associations, for presentation to a client requesting said file content, said virtual file providing an illusion to said client that said file content is contiguous in said network node.

[c14] 14. The computer program product of claim 13, wherein said network comprises a packet-communication network.

[c15] 15. The computer program product of claim 13, wherein said obtain a plurality of block files comprises:
obtain said large payload file from a user;
evaluate said large payload file to locate a portion having substantive content;

determine if said content from said large payload file comprises linear characteristics by determining if said substantive content is located at a starting end of said large payload file;

generate a track file if said content comprises said linear characteristics;

generate a plurality of track files if said content does not comprise said linear characteristics;

determine at least one desired block size;

if said content comprises linear characteristics, divide said track file to generate a plurality of block files, wherein each of said block files correspond in size to said at least one desired block size;

if said content does not comprise linear characteristics, divide each of said plurality of track files to generate a plurality of block files, wherein each of said block files correspond in size to said at least one desired block size.

[c16] 16. The computer program product of claim 15, wherein said desired block size is determined by selecting a block size to maximize space usage within said network's maximum transmission unit.

[c17] 17. The computer program product of claim 15, wherein said network has a plurality of distribution nodes and said desired block size is determined by selecting a block size to minimize congestion at said distribution nodes of said network.

[c18] 18. The computer program product of claim 15, wherein said desired block size is determined by selecting a block size to minimize fragmentation of said plurality of storage devices.

[c19] 19. The computer program product of claim 15, wherein said at least one block size comprises a fixed value.

[c20] 20. The computer program product of claim 13, wherein said associate said plurality of block files comprises distributing said plurality of block files amongst said plurality of storage devices such that said plurality of storage devices are load balanced during input/output operations.

[c21] 21. The computer program product of claim 13, further comprising computer readable program code configured to store said associations in a file metadata in said plurality of storage devices, said associations comprising information for rebuilding said large payload file from said block files.

[c22] 22. The computer program product of claim 13, wherein said network comprises a plurality of nodes and said plurality of block files is obtained from other nodes of said network.

[c23] 23. The computer program product of claim 21, wherein said create a virtual file comprises:
obtain information about said large payload file from said file metadata;
use said information to construct a virtual representation of said large payload file.

[c24] 24. An apparatus for distributing content of large payload file to a plurality of storage devices in a network node comprising:
one or more first servers in a first server cluster of a network node obtaining a plurality of block files representing content of a large payload file for storage in a plurality of storage devices in said network node, said one or more first servers associating said plurality of block files with said plurality of storage devices and storing said plurality of block files in said plurality of storage devices based on said associations;
one or more second servers in a second server cluster of said network node creating a virtual file, using said associations, for presentation to a client requesting said file content, said virtual file providing an illusion to said client that said file content is contiguous in said network node.

[c25] 25. The apparatus of claim 24, wherein said network comprises a packet-communication network.

[c26] 26. The apparatus of claim 24, wherein said obtaining a plurality of block files comprises:
a third server obtaining said large payload file from a user, said third server

evaluating said large payload file to locate a portion having substantive content and determining if said content from said large payload file comprises linear characteristics by determining if said substantive content is located at a starting end of said large payload file, said third server generating a track file if said content comprises said linear characteristics and transmitting said track file to said one or more first servers, and said third server generating a plurality of track files if said content does not comprise said linear characteristics and transmitting said plurality of track files to said one or more first servers; said one or more first servers receiving said large payload file in the form of one or more track files, said one or more first servers determining at least one desired block size for dividing said one or more track files into a plurality of block files, wherein each of said block files correspond in size to said at least one desired block size.

[c27] 27. The apparatus of claim 26, wherein said desired block size is determined by selecting a block size to maximize space usage within said network's maximum transmission unit.

[c28] 28. The apparatus of claim 26, wherein said network has a plurality of distribution nodes and said desired block size is determined by selecting a block size to minimize congestion at said distribution nodes of said network.

[c29] 29. The apparatus of claim 26, wherein said desired block size is determined by selecting a block size to minimize fragmentation of said plurality of storage devices.

[c30] 30. The apparatus of claim 26, wherein said at least one block size comprises a fixed value.

[c31] 31. The apparatus of claim 24, wherein said associating said plurality of block files comprises distributing said plurality of block files amongst said plurality of storage devices such that said plurality of storage devices are load balanced during input/output operations.

[c32] 32. The apparatus of claim 24, further comprising said one or more first servers

storing said associations in a file metadata in said plurality of storage devices, said associations comprising information for rebuilding said large payload file from said block files.

[c33] 33. The apparatus of claim 24, wherein said network comprises a plurality of nodes and said plurality of block files is obtained from other nodes of said network.

[c34] 34. The apparatus of claim 32, wherein said creating a virtual file comprises: obtaining information about said large payload file from said file metadata; using said information to construct a virtual representation of said large payload file.

09621665-052704